GUIDE TO

THIRTY-THIRD ANNUAL FIELD CONFERENCE

OF THE

SECTION OF GEOLOGY

OF THE

OHIO ACADEMY OF SCIENCE

April 12, 1958

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GEOLOGY OF THE AKRON - CLEVELAND AREA

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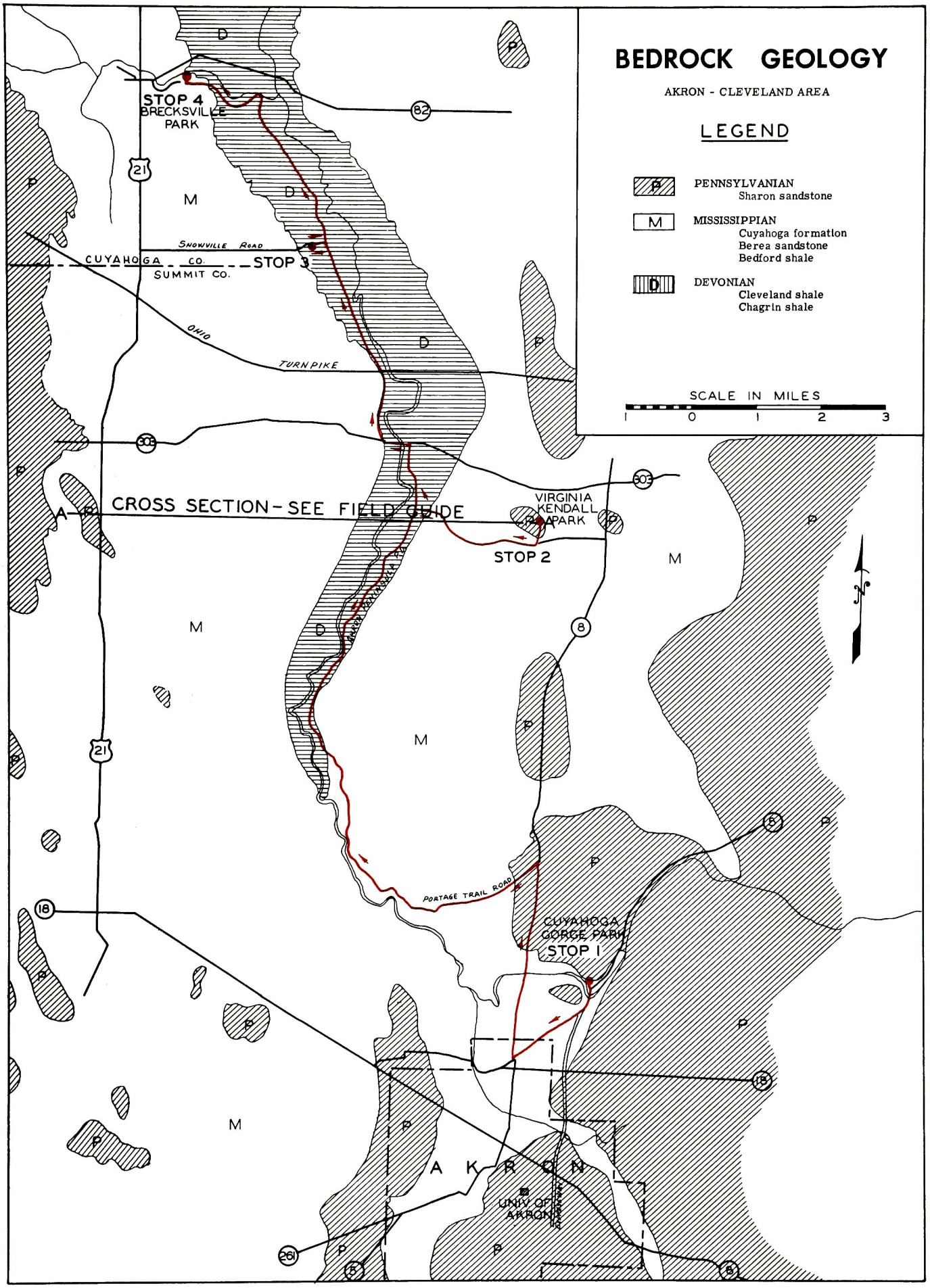
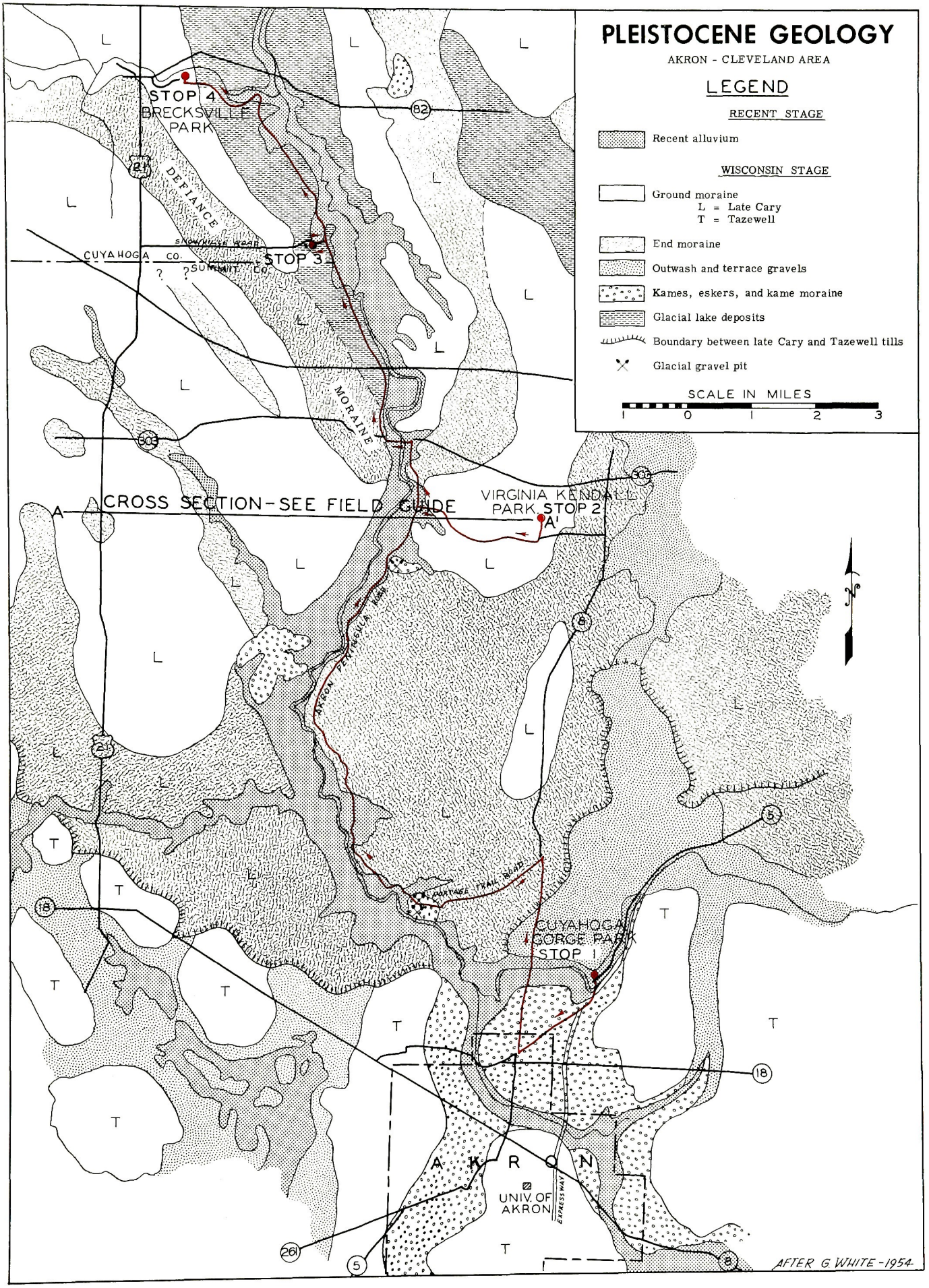

BEDROCK GEOLOGY
AKRON - CLEVELAND AREA
LEGEND
P PENNSYLVANIAN
Sharon sandstone
M MISSISSIPPIAN
Cuyahoga formation
Berea sandstone
Bedford shale
D DEVONIAN
Cleveland shale
Chagrin shale
SCALE IN MILES
1 0 1 2 3
STOP 4
BRECKSVILLE PARK
STOP 3
SNOWVILLE ROAD
CUYAHOGA CO.
SUMMIT CO.
OHIO TURNPIKE
CROSS SECTION - SEE FIELD GUIDE
A
A'
VIRGINIA KENDALL PARK
STOP 2
CUYAHOGA GORGE PARK
STOP 1
PORTAGE TRAIL ROAD
AKRON
UNIV OF AKRON
82
21
303
8
18
5
261


PLEISTOCENE GEOLOGY
AKRON - CLEVELAND AREA
LEGEND
RECENT STAGE
Recent alluvium
WISCONSIN STAGE
Ground moraine
L = Late Cary
T = Tazewell
End moraine
Outwash and terrace gravels
Kames, eskers, and kame moraine
Glacial lake deposits
Boundary between late Cary and Tazewell tills
Glacial gravel pit
SCALE IN MILES
1 0 1 2 3
STOP 4
BRECKSVILLE PARK
DEFIANCE
SKYLINE ROAD
CUYAHOGA CO.
SUMMIT CO.
STOP 3
MORAINE
CROSS SECTION - SEE FIELD GUIDE
A
A'
VIRGINIA KENDALL PARK STOP 2
AKRON PENINSULA ROAD
PORTAGE TRAIL ROAD
CUYAHOGA GORGE PARK STOP 1
AKRON
UNIV. OF AKRON
EXPRESS WAY
AFTER G. WHITE - 1954

STRATIGRAPHIC SECTION FOR THE AKRON - CLEVELAND AREA

System	Series	Stratigraphic Units		Approximate Thickness (Feet)
Quaternary	Pleistocene	Wisconsin stage	Cary substage	
			Tazewell substage	
		Disconformity		
Pennsylvanian	Pottsville	* Sharon conglomerate		0 - 100 ±
		Disconformity		
Mississippian	Osagean	* Cuyahoga formation	* Meadville member	250 - 350
	?		Strongsville member / * Sharpsville member	
	Kinderhookian		* Orangeville member	
			Aurora submember	
			Sunbury submember	
		* Berea sandstone		40
		Disconformity		
		* Bedford shale	Sagamore member	50 - 80
			* Euclid member	
Miss. or Dev.		Cleveland shale		30
Devonian		Chagrin shale		12 - 15

* Stratigraphic units exposed at Stops 1, 2, or 4.

GEOLOGY OF THE AKRON - CLEVELAND AREA

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Assembly - 8:00 A. M. in parking lot of Gorge Memorial Park. This is an Akron municipal park. Extra guide books and topographic maps will be available at this time. Additional tickets for box lunches may also be obtained.

Drivers - Please mark your cars with the paper markers provided. When driving along the field-trip route, stay in line and be careful; some of the roads we will travel are heavy traffic highways.

The assembly point is Stop 1, and since we will be away from the cars for about two hours, it is advised that cars be locked up and that any materials you may need such as notebooks, pencils, etc., be taken along with you at this time.

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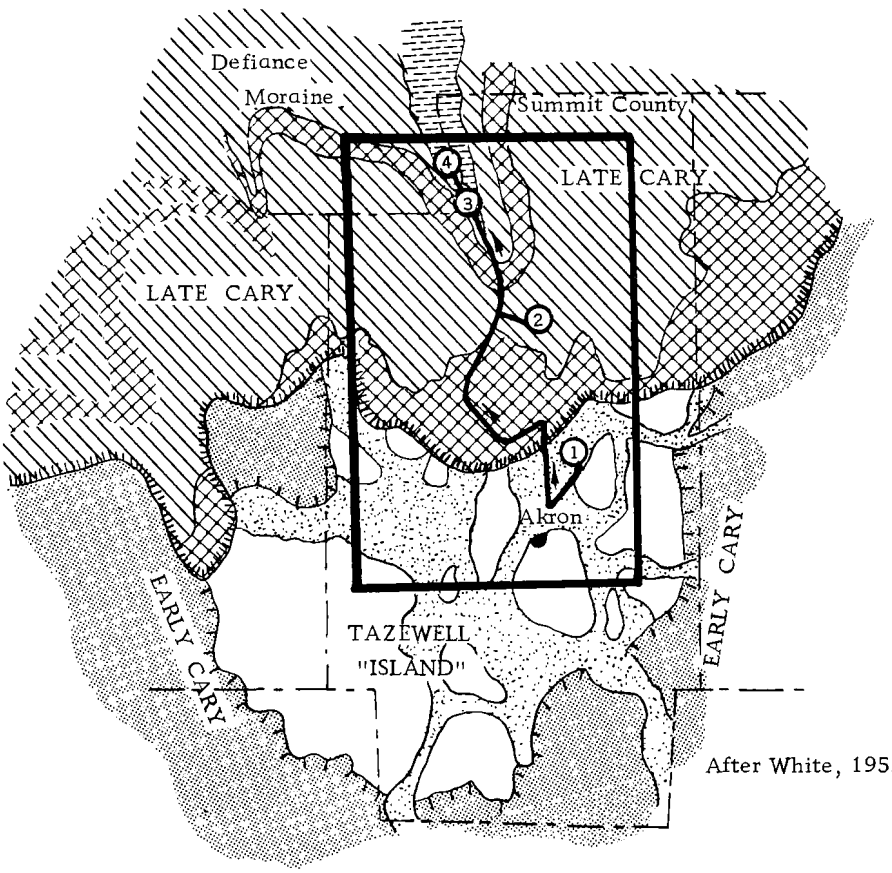
Mileage Individual	Mileage Total	Road Log
0.0	0.0	STOP 1 - Gorge Memorial Park. We will plan to leave this stop at 10:30 A. M.

The section exposed in Gorge Memorial Park is as follows:

	Feet
Drift - late Cary outwash (see discussion below)	very thin
Sharon conglomerate - conglomerate and pebbly sandstone; cross-bedding	40
Disconformity	
Cuyahoga formation Meadville member - Interbedded blue-gray shale and siltstone; few thin calcareous siltstones. A thin bed with Taonurus impressions marks the base of the member. Some zones are fossiliferous. Among the more common forms are: Leptagonia analoga, Schellwienella desiderata, Chonetes (several species), Buxtonia? newberryi, Spirifer centronatus, Cliothyridina incrassata, Leiopteria cuyahoga, Conocardium alternistriatum, Platyceras (Orthonychia) cornuforme.	105

MAP OF SUMMIT COUNTY AREA

SHOWING DISTRIBUTION OF THREE WISCONSIN DRIFT SHEETS



After White, 1953.

Late Cary ground moraine

Late Cary end moraine

Early Cary till

Tazewell till

Outwash & kames (mostly Late Cary)

Lake deposits

Area covered by large scale map

Field trip route

① Stop

Boundary of Late Cary till

Boundary of Early Cary till

Sharpsville member - Interbedded blue-gray siltstone and shale; few calcareous siltstone beds. Oribiculoidea newberryi rather common in some zones. . . 36

Orangeville member - Shale, soft, dark blue-gray; few siltstone interbeds. The upper 10 or 15 feet of this member is exposed at this locality. 10

Pleistocene Geology of Gorge Memorial Park and the Akron Area

The Akron area lies in the midst of one of the most interesting Pleistocene regions in Ohio, for this is the center of an "island" of older Wisconsin drift surrounded on all sides by drift of younger age. A peninsula of higher land, capped by resistant lower Pennsylvanian rocks (Sharon conglomerate and others), is present in Summit, Portage, and Geauga Counties. Though it did not prevent deposition of Tazewell till in the Akron area, the highland so deflected the advance of the subsequent Early Cary ice that the region around Akron was never covered by till of that age, although it almost completely surrounds this area. The final glacial advance, the Late Cary, reached only to the northern part of this region. As a result, the distribution of the different tills is quite distinct, as shown on the small accompanying map.

The Pleistocene geology of this area has been mapped by Dr. George White (1953) and his students; all information presented in this summary has been taken from their work.

In cooperation with Dr. Shepps (White and Shepps, 1952; Shepps, 1953) Dr. White has shown that these three tills differ markedly in mechanical analysis, a real aid in the regional mapping of northeastern Ohio. Though composed like all tills of sand, silt, clay, and boulders, the Tazewell till is markedly sandy in composition, while the Late Cary till is high in clay. These data for all three tills are tabulated below:

	Sand content	Clay content	Occurrence
Late Cary till	Very low	Very high	East-west belt to north
Early Cary till	Low	Moderately high	East-west belt to south
Tazewell till	Very high	Very low	Small "island" in Akron area

Here at Gorge Memorial Park, we are located beside a gorge which, though deepened in post-glacial time, is following a

Late Cary drainageway. The small map showing the distribution of the different tills also shows, by the outwash mapped, the number and extent of the drainageways developed in Late Cary time (and possibly also Early Cary time) to carry the melt-water away, across the Tazewell till. The upland flats between here and Cuyahoga Falls to the north are capped with outwash of this origin, deposited when the Late Cary ice edge stood not far to the north. A mile to the northwest is the southernmost boundary of the Late Cary end moraine, onto which our route will rise at about mileage 2.4 . Kames of post-Tazewell age lie to the south and west of here. On the upland to the south-east is ground moraine of Tazewell age, representing some of the till that was never covered by later Wisconsin glacial deposits and so is left as part of the "inlier" or "island" of Tazewell drift.

0.0 0.0 - Upon leaving the parking lot turn right on to Route 5 and proceed across the Cuyahoga River Bridge.

0.3 0.3 - Intersection - Bear right, keeping on Route 5.

Route here lies on Late Cary kettled kames. Kettles may be seen on topographic maps (Kent and Akron quadrangles). Road passes through what was once a large shallow kettle. Just before next turn, on left, route passes what was once a kettle 50 feet deep, which has since been filled in and incorporated in city expansion.

1.0 1.3 - Intersection - Turn right on to Route 8.

1.1 2.4 - Bridge across Cuyahoga River - On left, note landslide at base of radio tower. This slide is developed in glacial lake silts which are present in the Cuyahoga Valley at the radio tower. After crossing bridge, you will have passed north of the Late Cary - Tazewell boundary and will be travelling on the Late Cary end moraine.

1.9 4.3 - Intersection - This intersection is immediately past the Cathedral of Tomorrow (dome-shaped church now under construction). Upon approaching the church, keep in left lane so as to make left turn at intersection. After making left turn, you will be travelling on the Portage Trail. The hummocky topography along this road is Late Cary end moraine. The Portage Trail is probably one of the oldest highways in the west, having been the route of buffaloes across the summit of the state. In later years it became a portage for Indians from the northward flowing Cuyahoga drainage to the southward flowing Tuscarawas drainage.

2.1 6.2 - Gravel Pits - These gravel pits (on both sides of the road) are in Late Cary kames and lie only about a mile from the farthest extent of the Late Cary ice. Notice the view of the Cuyahoga Valley to the southwest from this vantage point.

The upland on both sides is mapped Late Cary end moraine, but Tazewell till lies only a mile or so to the south and southwest. Glacial lake clays and modern alluvium are present in the bottom of the valley. A mile and a half to the southeast, down the valley to the left (up the Cuyahoga River), is the junction of two large river valleys. The main Cuyahoga River, flowing toward the northwest, occupies the easternmost valley. The more southern valley, though it is somewhat larger than that from the east, is occupied by a much smaller stream, the Little Cuyahoga River. The reason for the unusual size of this latter valley seems to be that the valley carried glacial meltwater during Late Cary time which, having followed the Cuyahoga River Valley above that point, flowed south (upstream) through this valley (see southern part of the Pleistocene Geology map) to beyond the glaciated area.

A well at the Gilmore sheet metal plant on the right side of road has penetrated approximately 150 feet of glacial lake silts and clays.

0.6 6.8 - Intersection - Turn right on to Akron-Peninsula Road. This road is built mostly on glacial lake silts and clays.

0.8 7.6 - Radio Tower - On left side of road. WHKK (Akron).

1.0 8.6 - Sewage Disposal Plant - On left side of road. This is the Sewage Disposal Plant for the city of Akron. Note aeration and settling basins for water purification.

0.8 9.4 - Crossroad - Continue straight ahead. Note as you travel along this road the meandering nature of the Cuyahoga River which is characteristic of streams flowing in valleys with deep fill.

2.3 11.7 - Note Late Cary kames (exploited for gravel) to left, on opposite side of valley. Uplands are still Late Cary end moraine.

3.0 14.7 - Intersection - Turn right on Virginia Kendall Park Road (Camp Manotoc Road). Upper slopes of valley and upland here are Late Cary ground moraine. In much of this part of Ohio, areas mapped "ground moraine" do not represent flat till deposits (as in central and western Ohio), but very thin till over a rather hilly surface of bedrock.

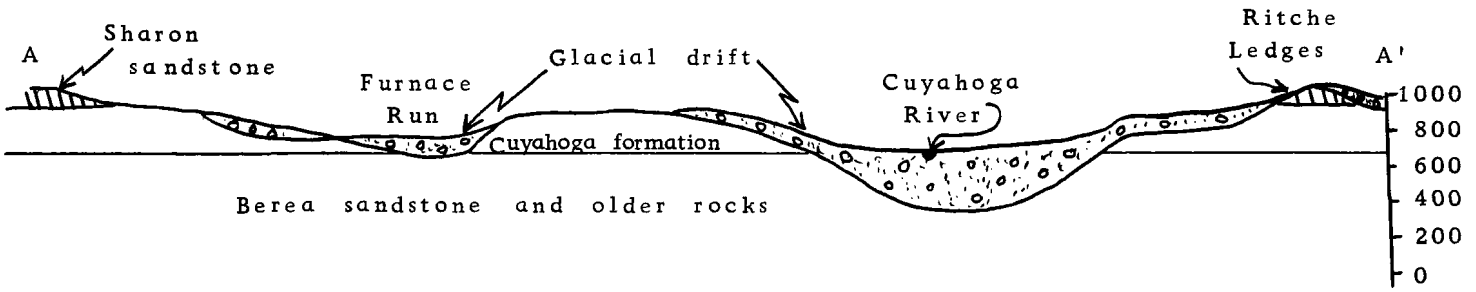
1.2 15.9 - Exposure - The Cuyahoga shale and siltstone is exposed in the creek bed on the right side of the road.

2.3 17.0 - Ritchie Ledges - Note the ledges of Sharon conglomerate and sandstone cropping out on the far left of the road.

0.1 17.1 - Intersection - Turn left to picnic area. After making turn, note small outcrop of Sharon along the side of the road.

0.4 17.5 - STOP 2 - Virginia Kendall Park - LUNCH - We will leave this area at 12:30 P. M. The ledges are formed by Sharon sandstone and conglomerate. Please keep in mind that this is an Akron municipal park area. Small specimens may be collected, providing the natural beauty of the outcrop is not impaired. We will have lunch before leaving this park.

CROSS SECTION ACROSS CUYAHOGA VALLEY



0.5 18.0 - Leave parking area and turn right.

0.2 18.2 - Intersection - Turn right and back-track to Akron-Peninsula Road in Cuyahoga River Valley.

2.3 20.5 - Intersection - Turn right on Akron-Peninsula Road and enter the village of Peninsula. Although it is not visible from the valley, the Defiance moraine crosses Summit County here (see map).

1.1 21.6 - Traffic light in Peninsula - Turn left. Cross Cuyahoga River.

0.4 22.0 - Traffic light - Turn right on Riverview Road.

0.5 22.5 - Note eastern approach to the Ohio Turnpike Bridge. This approach had to be supported with pilings, at considerable expense, in order to support the road, which is built on unstable lake clays and silts. These lake deposits are present in the Cuyahoga River Valley, more or less continuously,

from here to the margin of Lake Erie in Cleveland. The deposit increases in width to the north, as the valley broadens. At the next stop, sands and gravels within these lake deposits will be exposed. Thereafter (mileage 26.5) the route will lie on the constructional surface of these lake clays.

1.1 23.6 - Jog left in Boston and continue north on Riverview Road.

0.9 24.5 - Note landslide on left side of road. This slide was developed in lake clays and silts because of undercutting by the meandering Cuyahoga River. This slide disrupted road and rail travel several years ago.

1.0 25.5 - Intersection - Turn left on Snowville Road.

0.4 25.9 - Turn around. This is a one car at a time turn-around. Please keep to the right and stay in line.

0.2 26.1 - STOP 3 - $\frac{1}{2}$ hour. Sand pit in glacial lake clays and silts. Note laminations and nature of lake deposits, nature of sands, and their contacts. The explanation for the occurrence of the sand in the area of glacial lake deposits is not known at time of printing.

0.2 26.3 - Turn left - Continue north on Riverview Road.

0.2 26.5 - Road fork - Bear left, remaining on Riverview Road. In the next few miles, when the road is near stream level, it lies on modern alluvium. When it rises to higher ground, however, it lies on the constructional surface (terrace) of deposits accumulated in a glacial lake (mentioned under mileage 22.5).

2.5 29.0 - Chippewa Creek.

0.1 29.1 - Intersection - Turn left into Cleveland Metropolitan Park, Brecksville Reservation. Continue along park road, bearing right at every intersection. Road follows valley of Chippewa Creek, cut into the glacial lake deposits.

1.6 30.7 - STOP 4 - Brecksville reservation. Pavilion park area on right side of road. This will be the last official stop of the field trip. However, if anyone desires, there will be one or two additional optional stops a short distance away to see the Orangeville member of the Cuyahoga formation.

The section exposed along Chippewa Creek is as follows:

	Feet
Berea sandstone - medium-grained, cross-bedded sandstone, very few quartz pebbles. Exposed at the base of the Route 82 bridge	20
Disconformity	
Bedford shale - blue-gray and dark red shale, with interbedded ripple-marked siltstones. The Euclid siltstone member (about 15 feet thick) is exposed near the top of the cliff. The base of the member lies about 14 feet above the top of the Cleveland shale.....	65
Cleveland shale - gray-black, fissile shale. Conodonts are present but they are rather scarce. Fragments of the giant armored fish Dinicthys are also present.....	25
Chagrin shale - blue-gray, silty shale, inter-bedded with thin siltstone beds. Brachiopods abundant: Spirifer, Chonetes, Camarotoechia, Torynifer, Liorhynchus, Syringothyris, and several other genera.....	12

Three different Pleistocene deposits occur in the vicinity of this stop, above the recent alluvium of Chippewa Creek (and the Cuyahoga River). The lake sediments form a terrace about 100 feet above the alluvial surface. Rising up from this level to the town of Brecksville is Late Cary ground moraine, characterized by thin till over bedrock in much of the area. Southwest of Brecksville, and south of Chippewa Creek beyond (west of) Brecksville, is the narrow ridge of the Defiance moraine. It is also present on the east side of the Cuyahoga Valley. The Defiance moraine in northeastern Ohio is characterized by an irregular pattern, a result of the irregular bedrock surface in this part of Ohio.